

REMARKS

In the Office Action, the Examiner rejected pending claims 1-70. In view of the foregoing amendments and the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Objection to the Specification

In the Office Action, the Examiner objected to because page 16 of the Specification because the numbers after the term "Figs," in line 22 were not included. Although Applicants do not necessarily agree with the Examiner's objection, the Applicants amended the specification as set forth above. In view of this amendment, the Applicants respectfully request the Examiner withdraw the objection to the specification.

Objection to the Drawings

In the Office Action, the Examiner objected to the drawings. Specifically, the Examiner noted that the symbols "LL(1), HL(1), LH(1), and HH(1) in blocks 580, 582, 584, and 586 of Fig. 23 should be changed to "LL(3), HL(3), LH(3), and HH(3) to be consistent with the specification. Accordingly, Applicants have corrected Fig. 23 as set forth in the enclosed "replacement sheet."

The Examiner also objected to the drawings because, in Fig. 17, the action "generate sub-bands overflow" is listed in both blocks 368 and 378 and is performed whether or not an overflow exists (as checked in the previous "overflow" block 366). The Examiner asks if it is correct that the action "generate sub-bands overflow" is performed in block 368 even if there is no overflow. Applicants respond that the answer is "yes." Indeed, the function "generate sub-bands overflow" may be performed whether or not an overflow condition exists. However, in the illustrated embodiment, because the overflow is checked first (in block 366) before the function "generate sub-bands overflow" is performed, the same action of "generate sub-bands overflow" is included in

both downstream blocks 368 and 378. Applicants respectfully assert that the placement of this function in both blocks 368 and 378 is appropriate.

In view of the foregoing amendment and remarks, Applicants respectfully request the Examiner withdraw the objection to the drawings.

Claim Rejections under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claim 17 under U.S.C. § 112, First Paragraph for failing to comply with the enablement requirement. Specifically, the Examiner stated:

The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to support the following feature recited in Claim 17:

--dividing each tessellated block into subregions to be individually compressed based upon entropy of each subregion.

The specification never discloses any teaching to wavelet decompose an image, tessellate at least one decomposed set into tessellated blocks, and then further divide each tessellated block into subregions to be individually compressed based upon an entropy of each subregion.

Office Action Mailed November 12, 2004, pages 3-4. Applicants respectfully traverse this rejection.

Legal Precedent

Regarding the enablement requirement, the Examiner has the initial burden to establish a *reasonable basis* to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993). The test for enablement, as set forth by the Supreme Court, is whether the experimentation needed to practice the invention is undue or unreasonable? *Mineral*

Separation v. Hyde, 242 U.S. 261, 270 (1916). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991). The *undue experimentation* test essentially evaluates whether one of reasonable skill in the art can make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988). As long as the specification discloses at least one method for making and using the claimed invention that bears a *reasonable correlation* to the entire scope of the claim, then the enablement requirement of section 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 24 (C.C.P.A. 1970).

Deficiencies of the Rejection

In contrast to the Examiner's incorrect assertion, the present specification clearly enables one of ordinary skill in the art to make and use an embodiment of the invention, including the act of "dividing each tessellated block into subregions to be individually compressed based upon an entropy of each subregion," as recited in claim 17. *See, e.g.*, Specification, pages 12-14. For example, the Specification, in the discussion of Fig. 4, describes that "[w]hile the subregions may be of different lengths (i.e., number of pixels), in the presently preferred embodiment, each subregion includes data encoding an equal number of pixels." Specification, page 13, lines 9-11. The Specification further states:

- Those skilled in the art will readily recognize, however, that after compression the actual length of codes for the subregion will vary depending upon the intensity of the pixels within the subregion and the dynamic range of the digital data encoding the pixel intensities. It should also be noted that where the row length of the image matrix is an integer multiple of the subregion width, individual subregions will align with one another moving down the image matrix as represented in Fig. 4. In general, however, the present technique is not limited to such integer multiple row widths.

Specification, page 13, lines 11-18. Further, Applicants note that the applied compression is based on the entropy of each subregion. In contrast, dividing each tessellated block is not necessarily based on the entropy of the subregions. For these reasons, the Applicants respectfully requests withdrawal of the rejections under Section 112, First Paragraph.

Claim Rejections under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-15, 17-34, 36-46, 48-53, and 62-70 under U.S.C. § 102(e) as anticipated by Andrew (U.S. Patent No. 6,763,139). Applicants respectfully traverse this rejection.

Legal Precedent

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Claim Features Omitted from Cited Reference

Independent claims 1, 19, 31, 39, and 63 recite “*lossless* wavelet decomposition.” Independent claim 38 recites, “*lossless . . . wavelet deposition.*” Quite the opposite, the Andrew reference discloses a decomposition that is a discrete wavelength transform (DWP). See col. 5, line 7 - col. 6, line 11; col. 10, lines 23, 37; Fig. 1. The Andrew reference is absolutely devoid of lossless decomposition. The Andrew reference discloses a quantization or a floating point scheme, wherein floating point values of the coefficients are truncated. See col. 5, line 7 - col. 6, line 11; col. 10, lines 23, 37; col. 7, lines 4-33; col. 18, lines 56-59. In operation, the truncated portions of the coefficients are irreversibly lost. See col. 7, lines 4-33; col. 18, lines 56-59. Accordingly, the Andrew reference cannot anticipate the present independent claims or their dependent claims.

Independent claim 38 recites “*lossless integer* wavelet decomposition.” In stark contrast, the Andrew reference discloses a quantization or floating point decomposition. See, e.g., col. 18, lines 21-64. Indeed, the Andrew reference discloses that its transform coefficients are *assumed* to be represented in a binary integer form. See col. 10, lines 23-27. Thus, because the coefficients are only treated as integers, the decompression is clearly floating point, which is prone to error. In fact, the decimal portions of the coefficients are truncated and irreversibly lost, and would not be available during any subsequent processes, e.g., entropy encoding and/or Huffman encoding. See e.g., col. 5, lines 7- col. 7, line 33. Accordingly, the Andrew reference cannot anticipate independent claim 38 or its dependent claims.

For these reasons, the Applicants respectfully requests withdrawal of the rejections under 35 U.S.C. § 102.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 54-61 under 35 U.S.C. § 103(a) as obvious over Andrew (U.S. Patent No. 6,763,139) in view of Cooke, Jr. et al. (U.S. Patent No.

6,574,629); and claims 16, 35, and 47 under 35 U.S.C. § 103(a) as obvious over Andrew (U.S. Patent No. 6,763,139) in view of Sodagar et al. (U.S. Patent No. 6,157,746). Applicants respectfully traverse these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

Claim Features Omitted from Cited References

The Examiner relied on two combinations to reject several dependent claims. However, Applicants respectfully submit that the secondary references, Cook, Jr. et al. and Sodagar et al., do nothing to obviate the deficiencies of the Andrew reference discussed above with regard to the independent claims. Therefore, the dependent claims rejected under 35 U.S.C. § 103 are believed patentable by virtue of the subject matter they separately recite, and also because of their dependency on an allowable base claim. Moreover, there is no suggestion or motivation to combine these disparate references in the manner asserted by the Examiner or in the manner recited in the instant claims. For


these reasons, the Applicants respectfully requests withdrawal of the rejections under 35 U.S.C. § 103.

Conclusion

The Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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